

FIG. 1

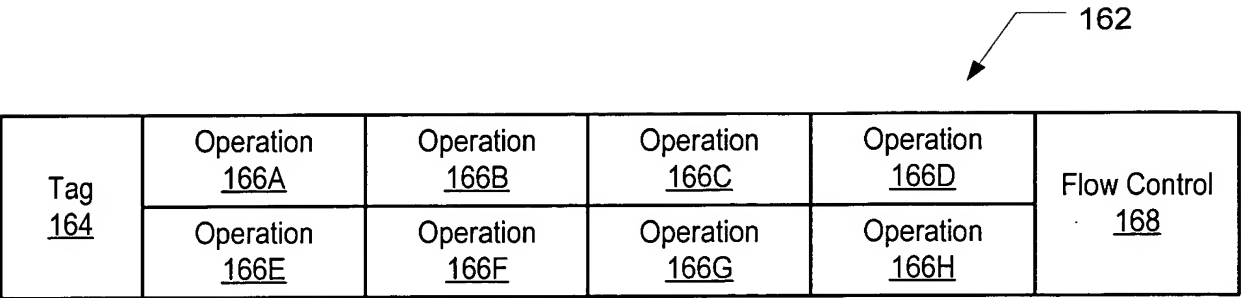


FIG. 2A

Liveness	Encoding <u>266</u>
Unconditionally Live	11
Subsequent to 1st Branch	10
Subsequent to 2nd Branch	01
Unconditionally Dead	00

FIG. 2B

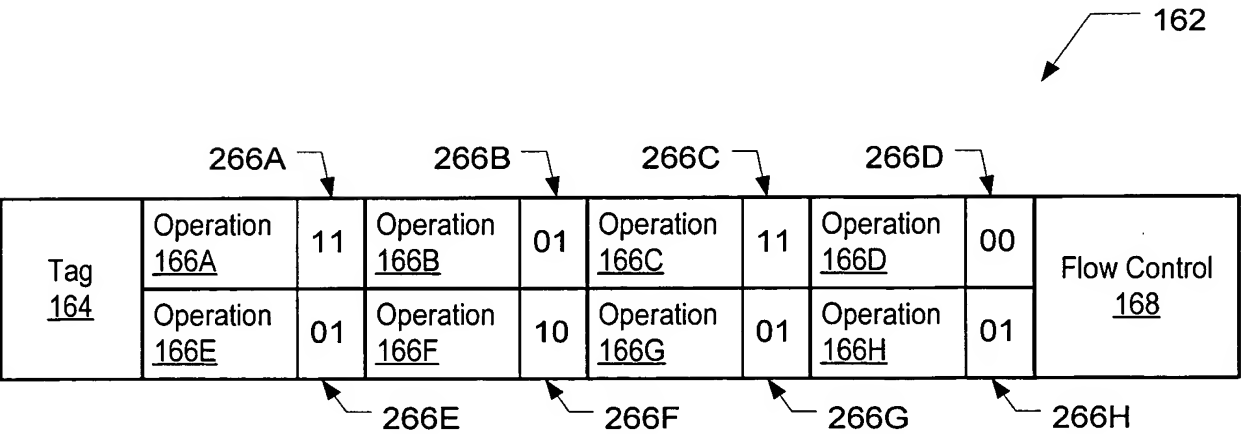


FIG. 2C

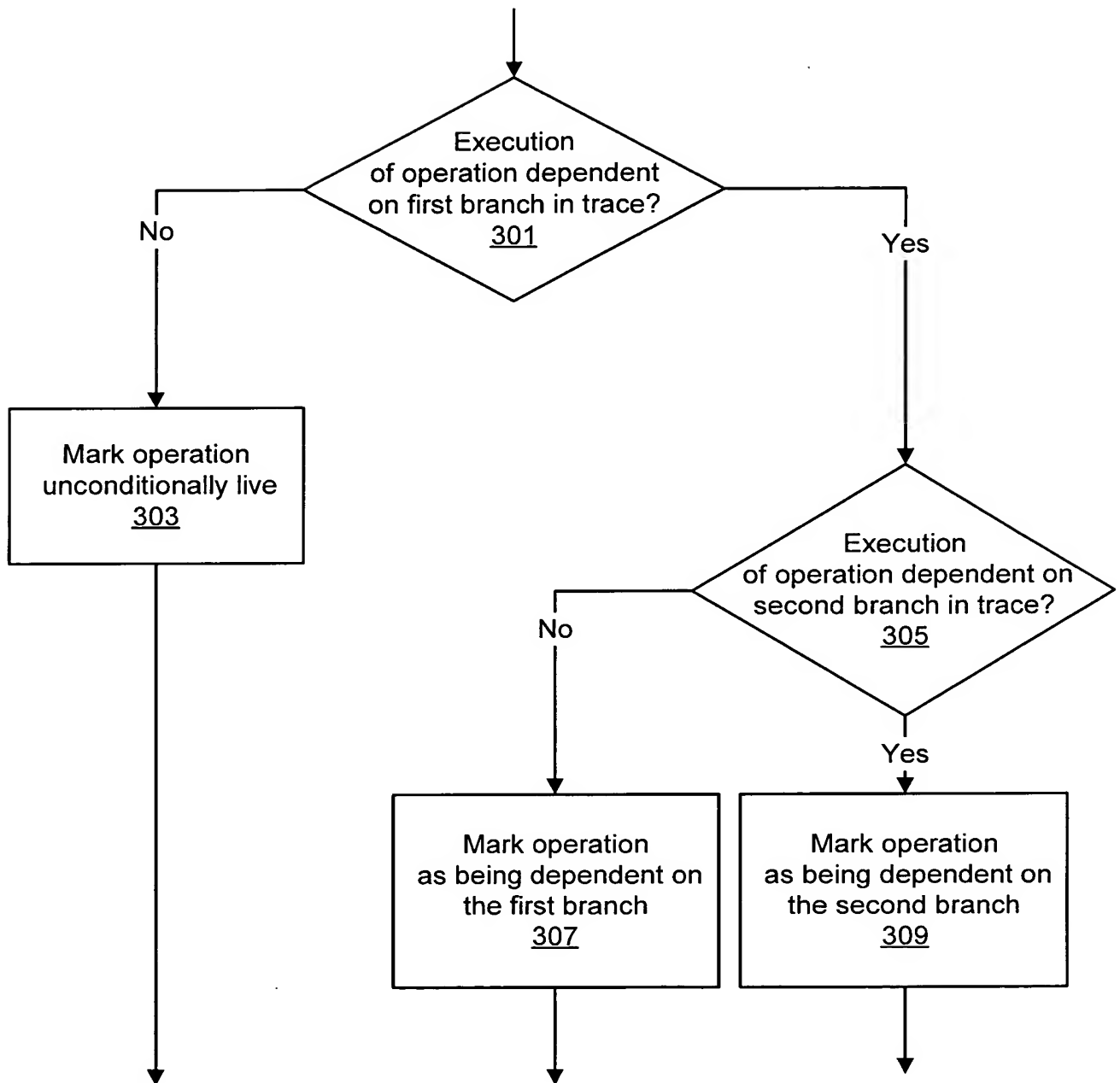


FIG. 3

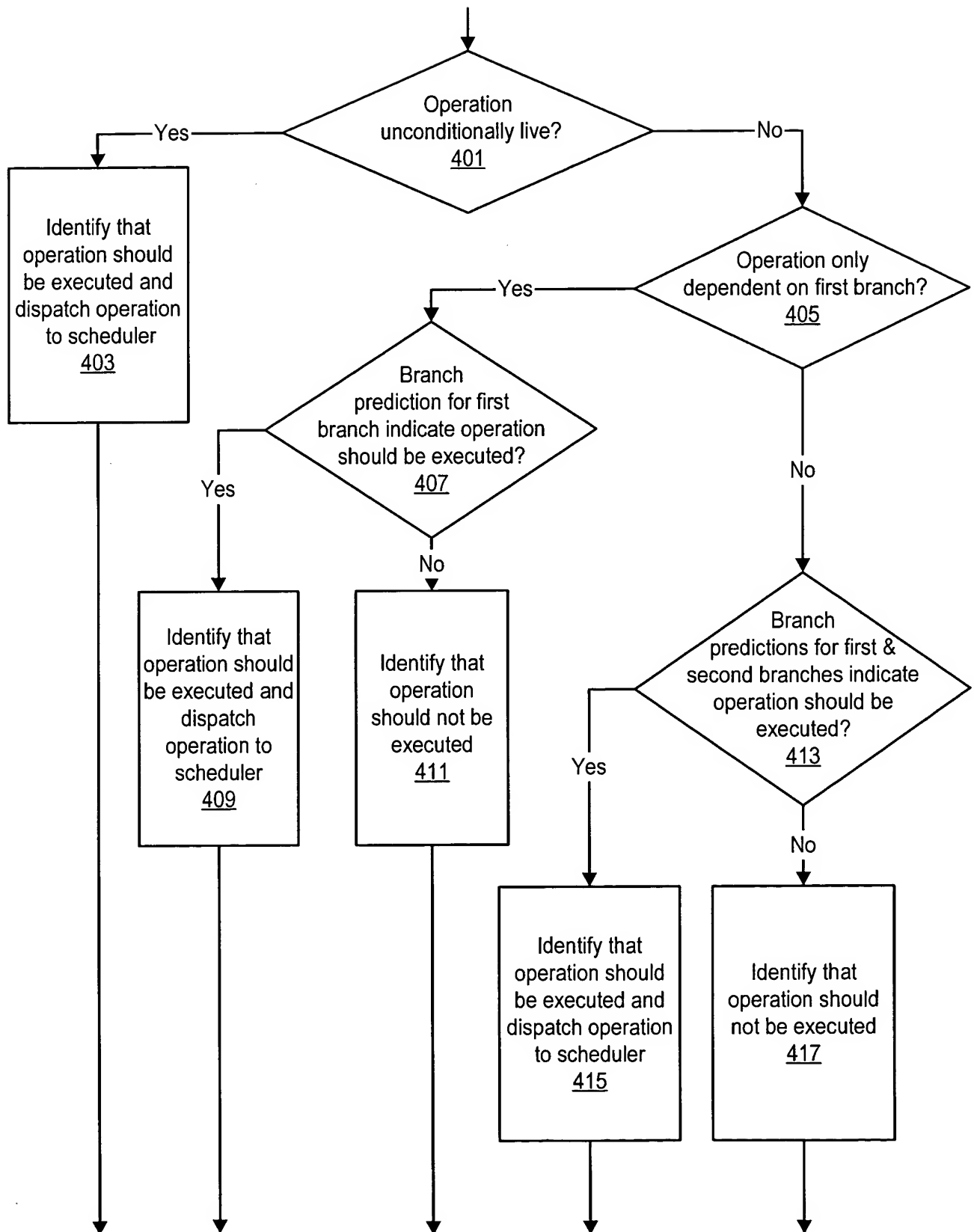


FIG. 4

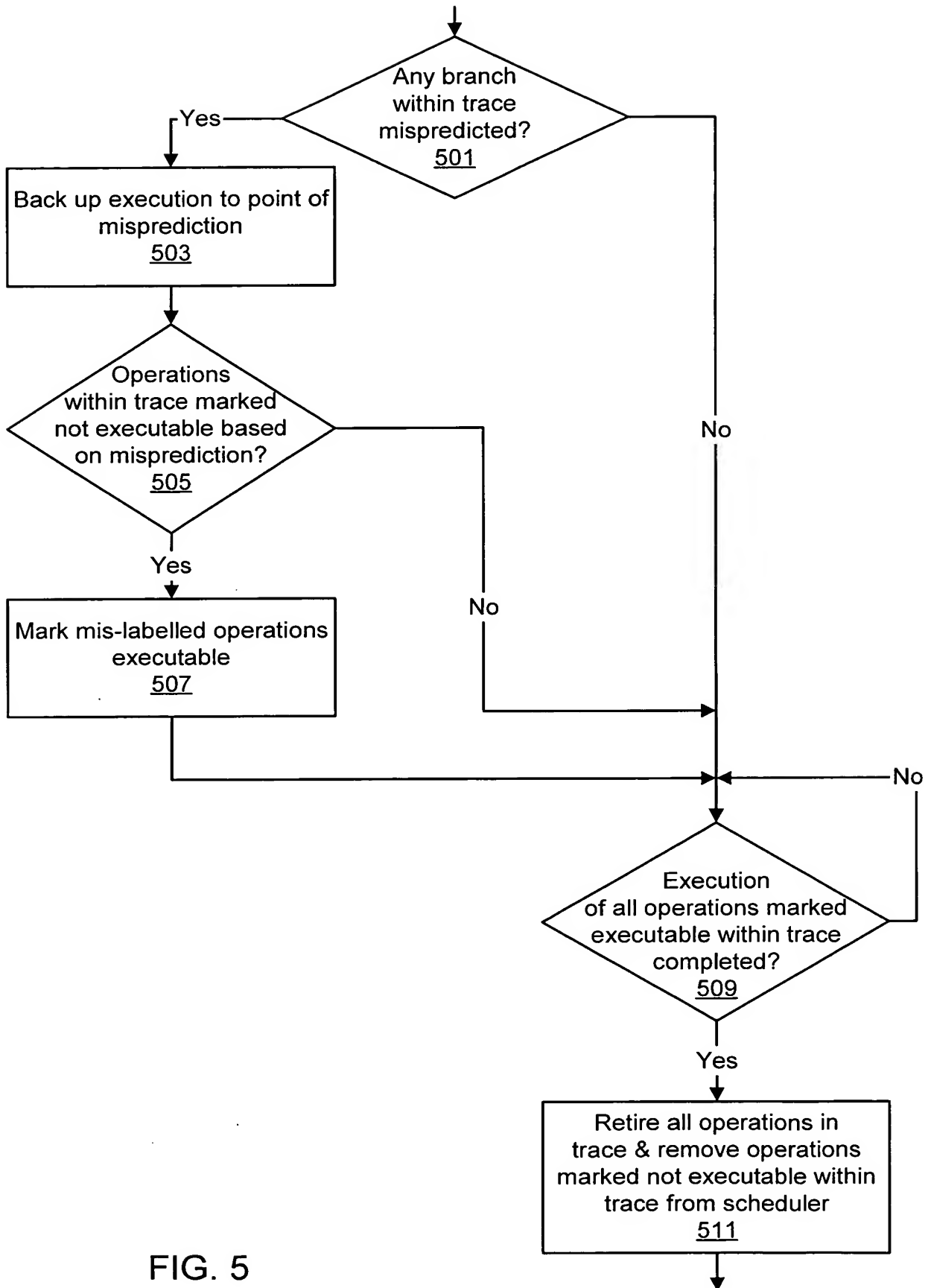


FIG. 5

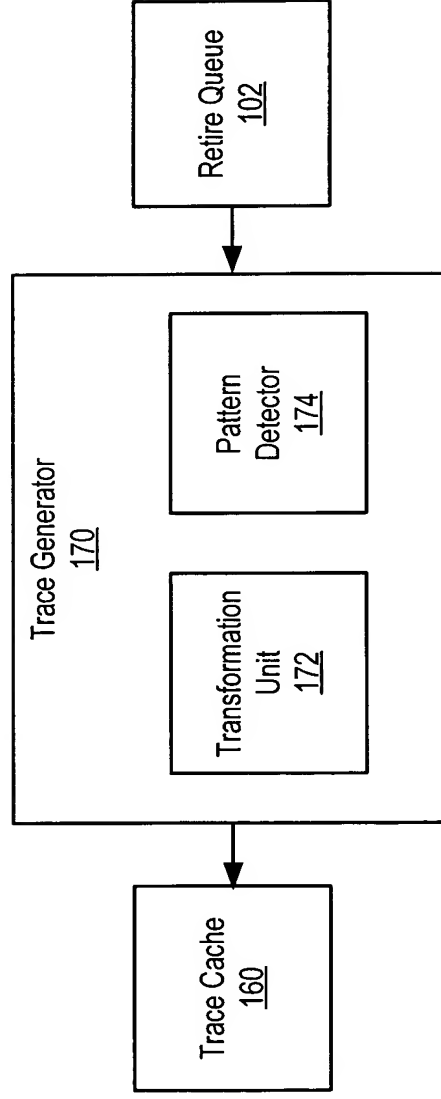


FIG. 6

Before Constant Propagation:

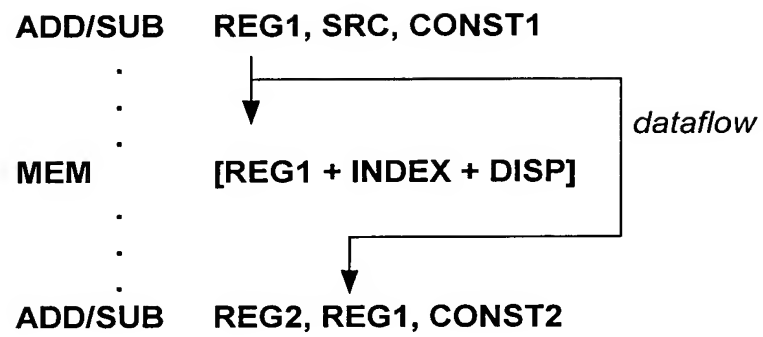


FIG. 7A

After Constant Propagation:

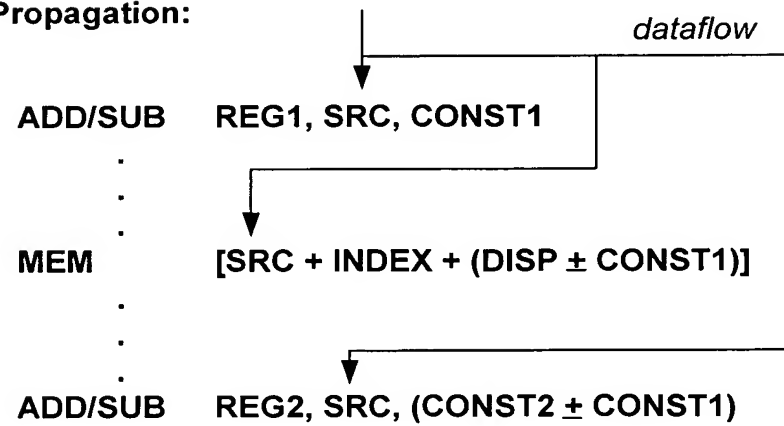



FIG. 7B

**Before Move Renaming:**

```
MOV  EAX, ESI
.  
.  
.  
ADD  EAX, EAX, 7
```



The diagram shows a vertical line of code. The first instruction is 'MOV EAX, ESI'. Below it are three dots. The second instruction is 'ADD EAX, EAX, 7'. An arrow points from the 'EAX' in the first instruction to the 'EAX' in the second instruction.

**FIG. 8A**

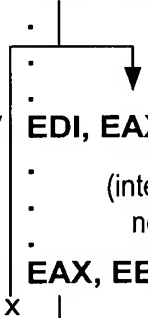
**After Move Renaming:**

```
ADD  EAX, ESI, 7
```

**FIG. 8B**

**Before Move Renaming:**

```
ADD  EAX, EAX, ESI
.  
.  
.  
MOV  EDI, EAX
.  
.  
.  
ADD  EAX, EBX, 2 (value in EAX destroyed)
```



The diagram shows a vertical line of code. The first instruction is 'ADD EAX, EAX, ESI'. Below it are three dots. The second instruction is 'MOV EDI, EAX'. Below that are three dots. The third instruction is 'ADD EAX, EBX, 2 (value in EAX destroyed)'. An arrow points from the 'EAX' in the first instruction to the 'EAX' in the third instruction. To the right of the dots, there is a note: '(intervening operations do not use value of EAX)'. There is an 'x' mark below the 'ADD' instruction.

**FIG. 9A**

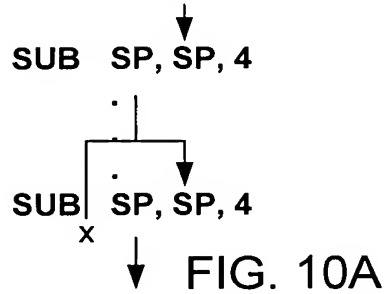
**After Move Renaming:**

```
ADD  EDI, EAX, ESI
.  
.  
.  
ADD  EAX, EBX, 2
```

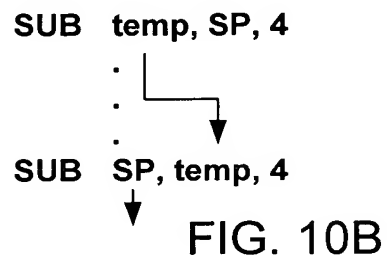
**FIG. 9B**



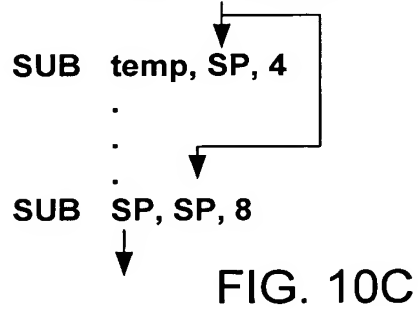
Before any transformations:



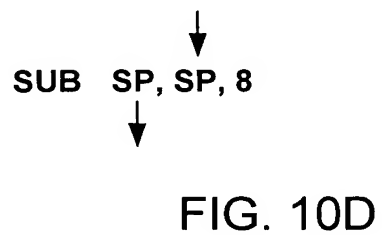
Slotification:



After Constant Propagation:



After Dead Operation Elimination:



**Before:**

**Op1   Sets condition code**  
    ▪     (intervening instructions do  
    ▪     not set condition code)  
    ▪  
**JNE   Label**

**FIG. 11A**

**After Branch Folding:**

**Op1   Sets condition code; fail if NE**

**FIG. 11B**

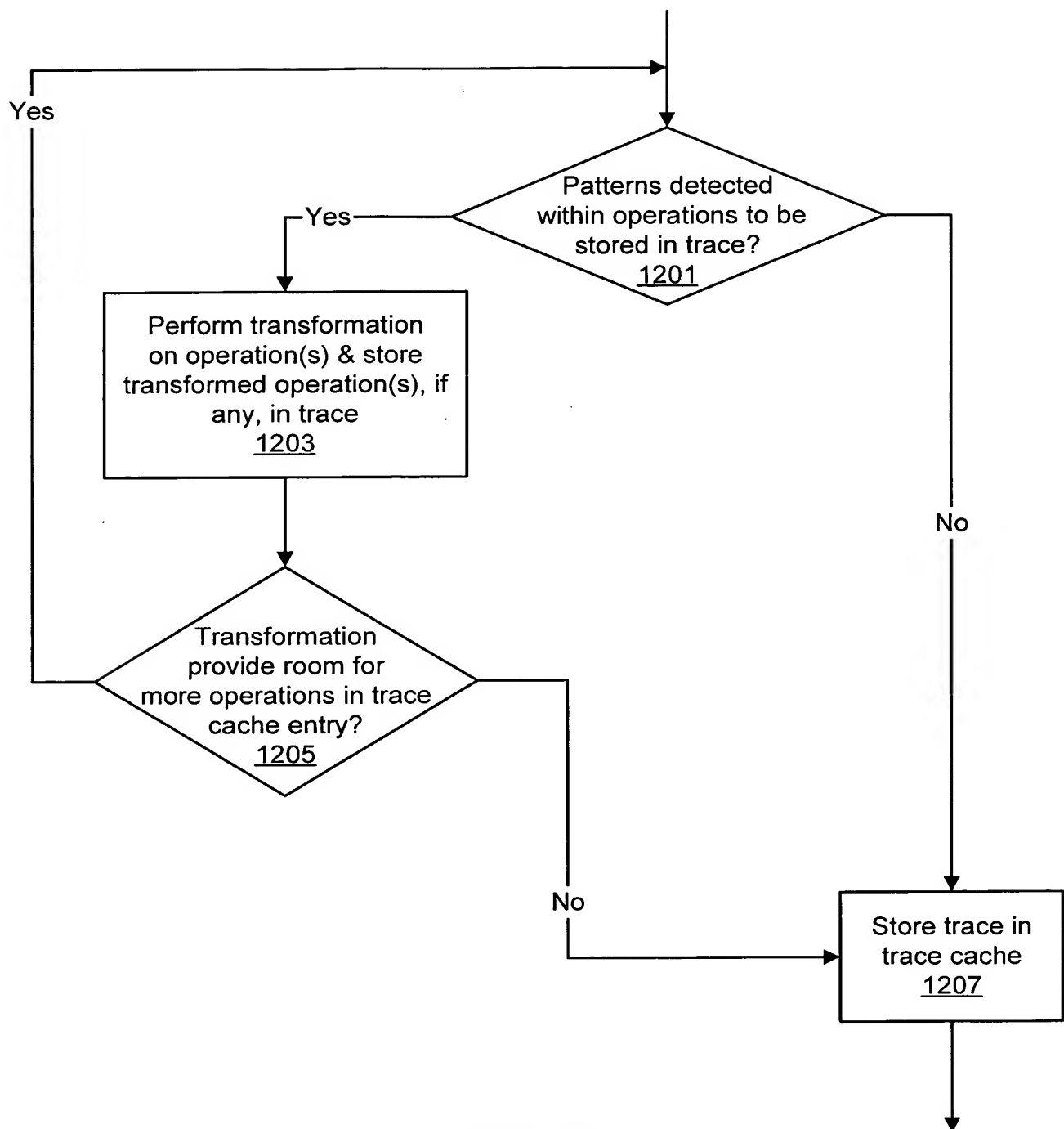


FIG. 12

**Instruction Stream:**

Instruction1  
Instruction2  
Instruction3  
Microcoded Instruction  
Instruction4  
Instruction5  
.  
.  
.

FIG. 13A

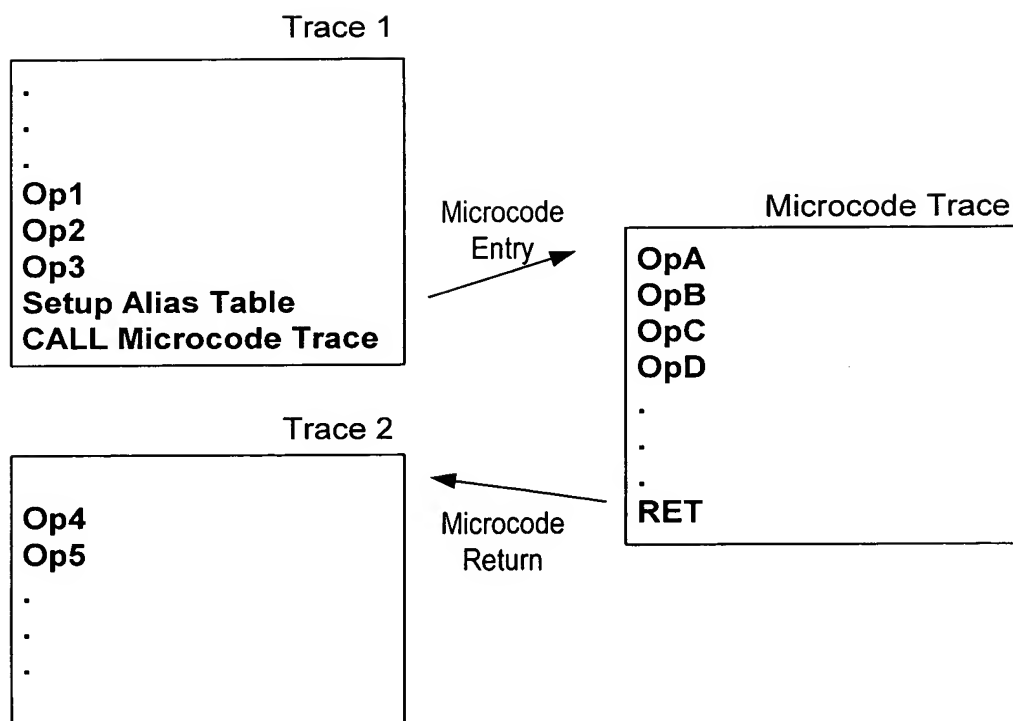


FIG. 13B

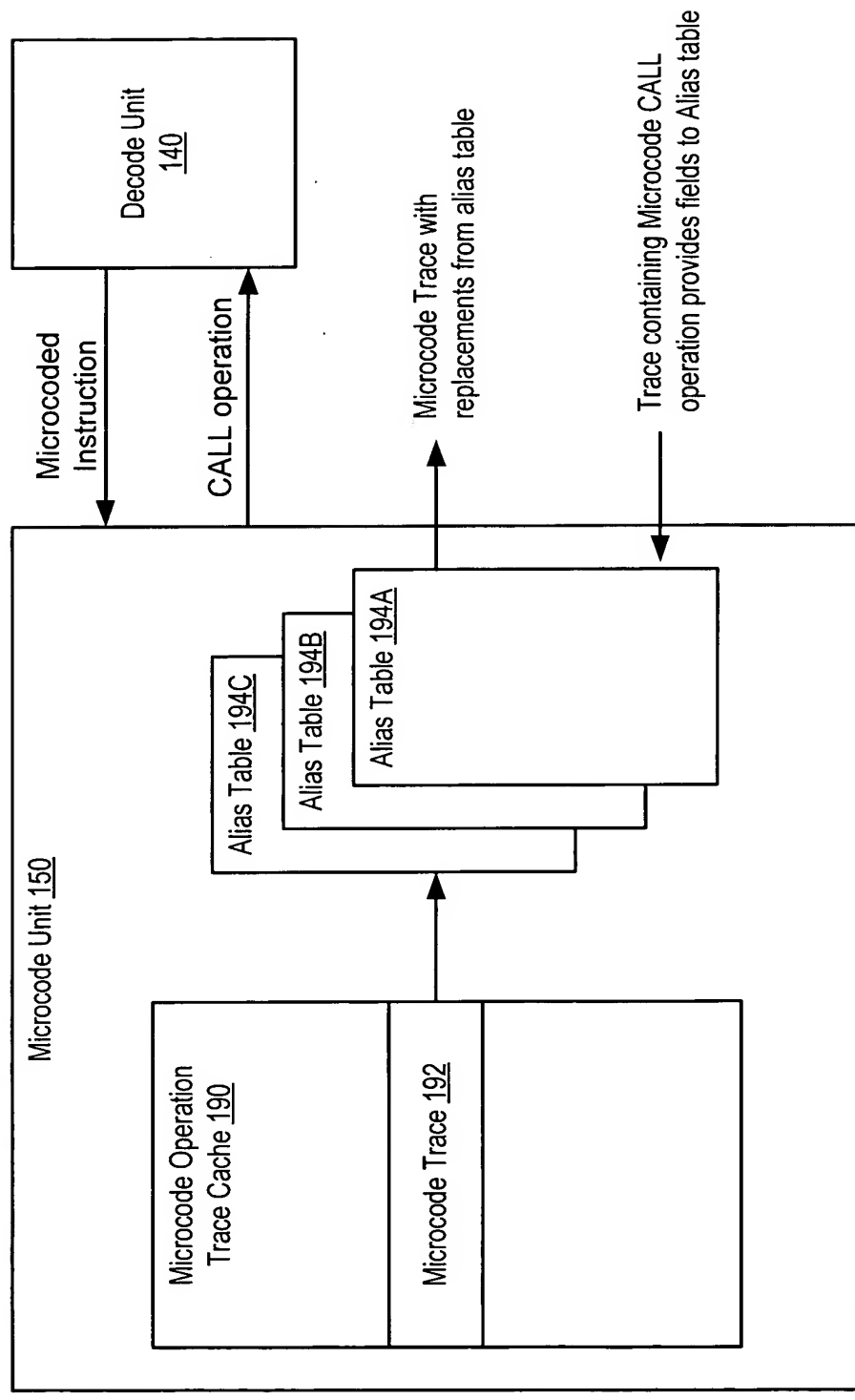


FIG. 13C

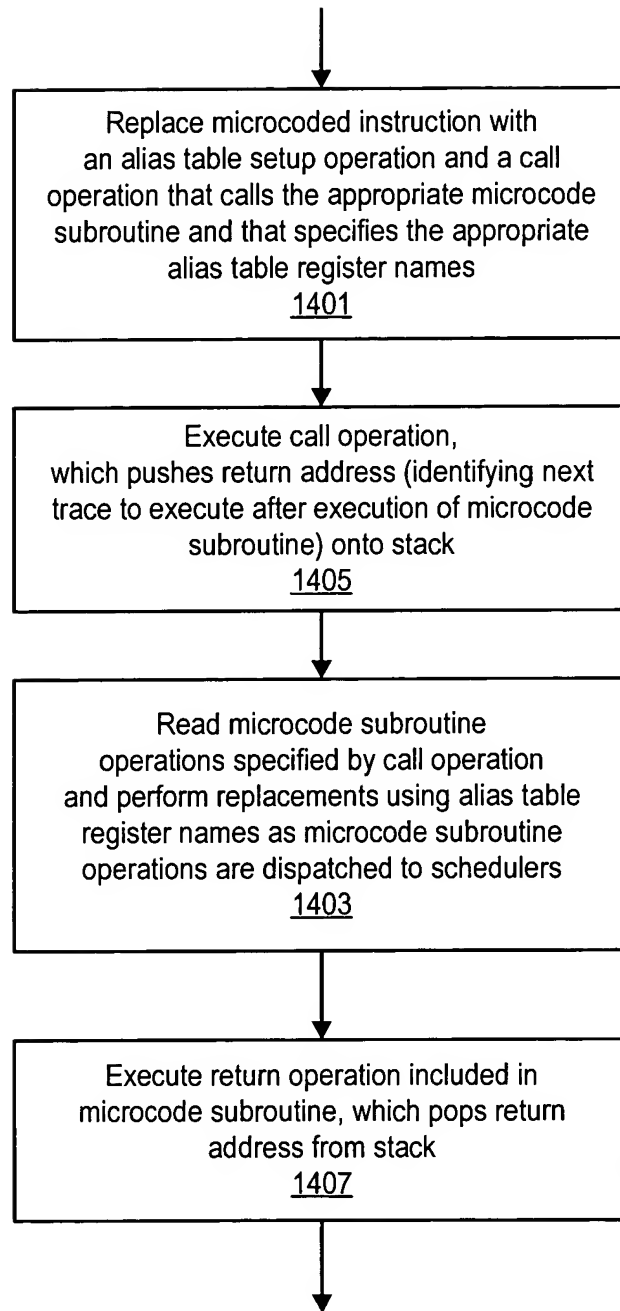


FIG. 14

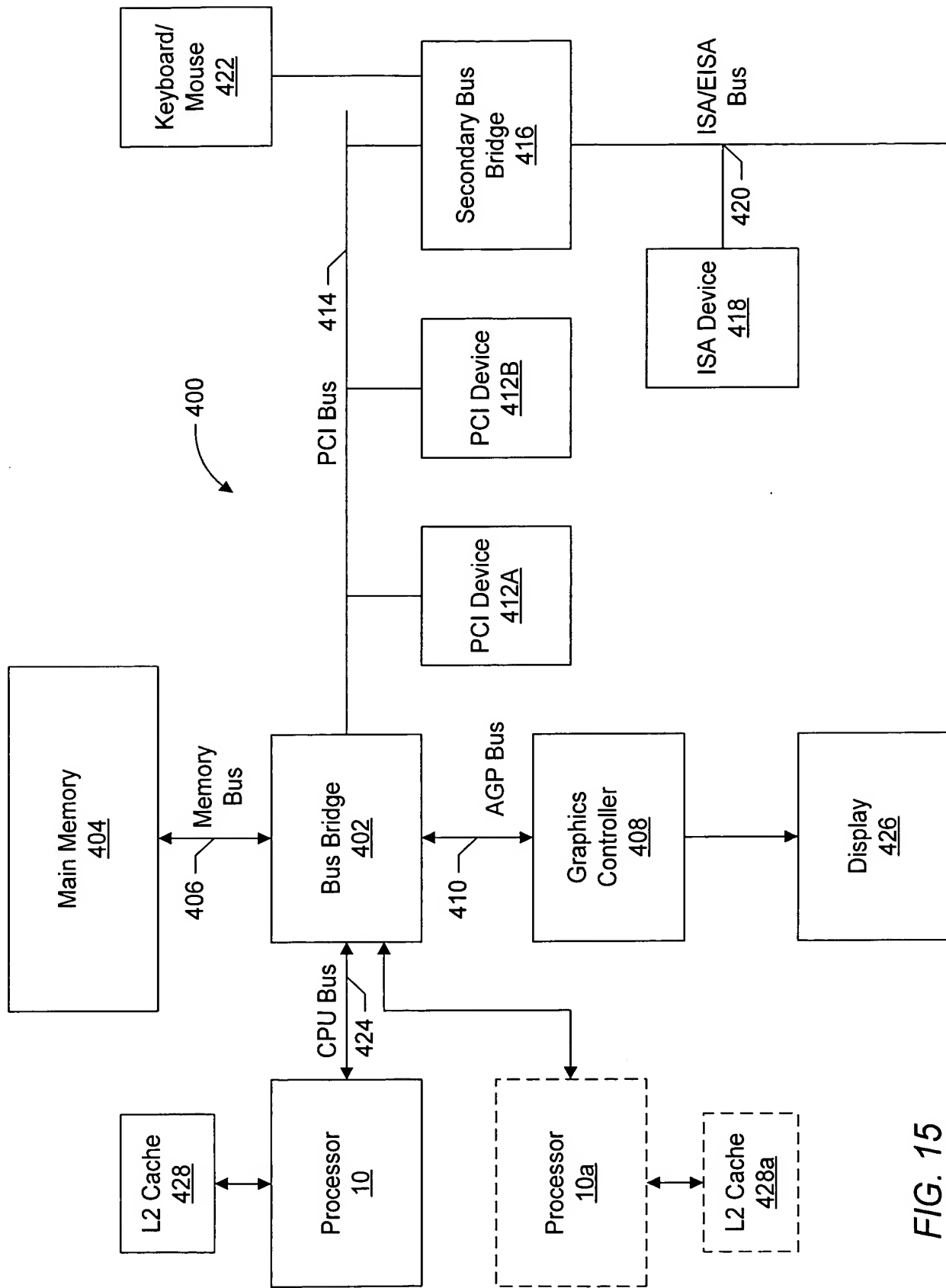


FIG. 15

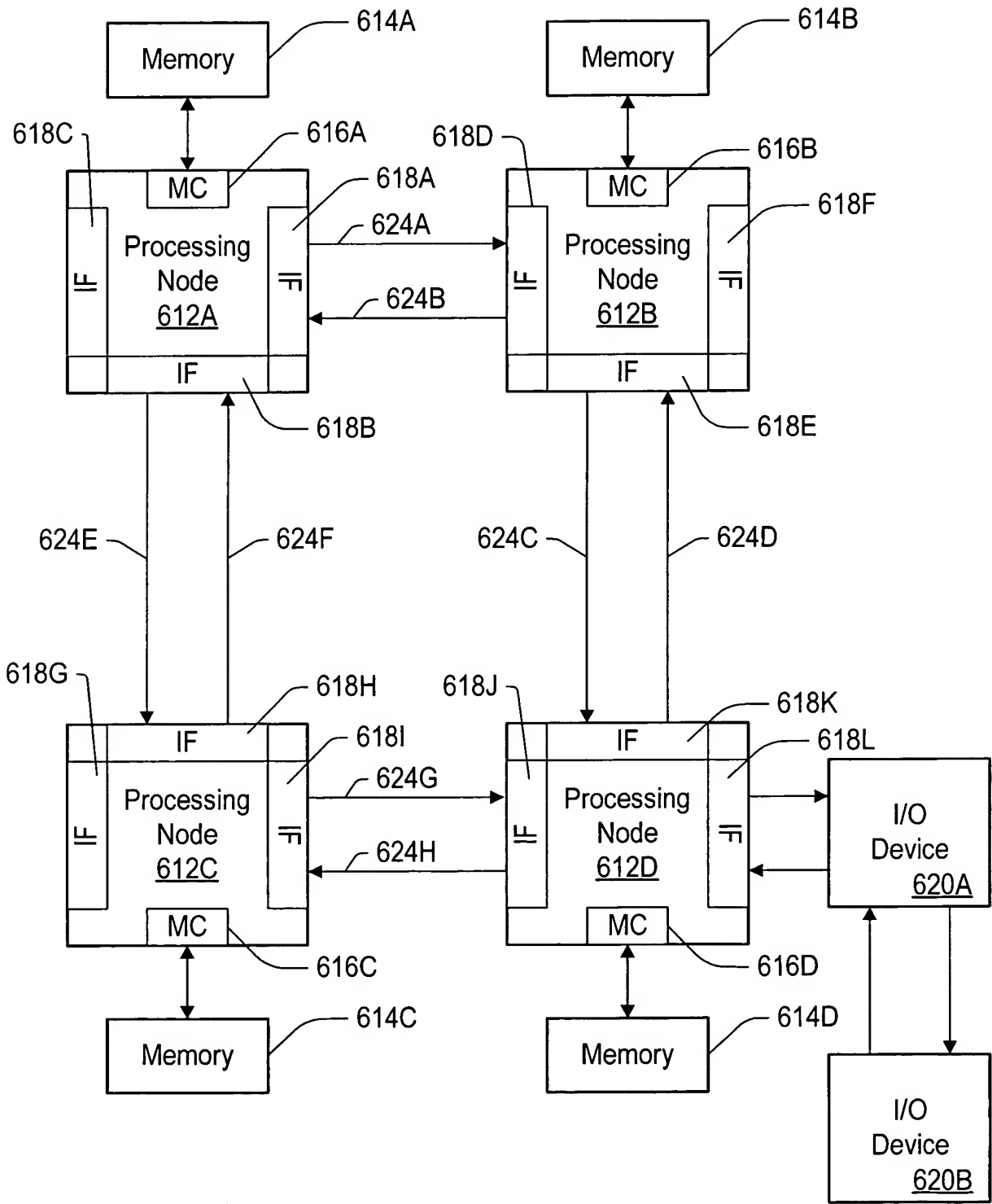


FIG. 16